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(54) Hand-operated stapler

(57) An improved stapler which ensures a constant force to apply to the staple and therefore ensures a successful stapling. The pressing piece 1 which presses a staple toward a staple bender is not directly driven by the downward movement of a handle H, but by a spring 2 which is in stressed state when the handle H is in its first or high position, thus the force applied to the staple is independent from the user's effort and always remains constant.

The handle H is biased by a spring 4 to occupy the first position. In this position, the piece 1 has been moved away from the bender by one end 31 of lever 3, and the spring 2 for biasing the piece 1 towards the bender has been stressed. Upon depressing the handle H towards a second position (low position) end 31 is disengaged from piece 1 whereby stressed spring 2 drives piece 1 towards the bender. The lever 3 is floatingly pivoted and includes at its other end a roller 33 which rides on the inner side of handle H. A steel strip 6 may be provided on the inner side of handle H.

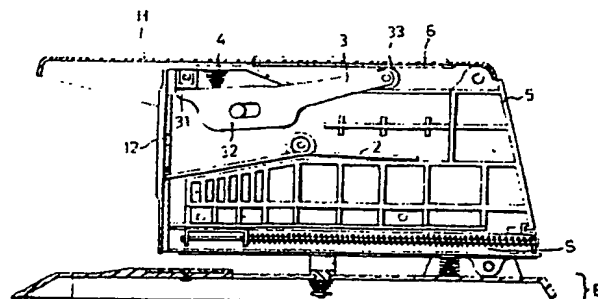
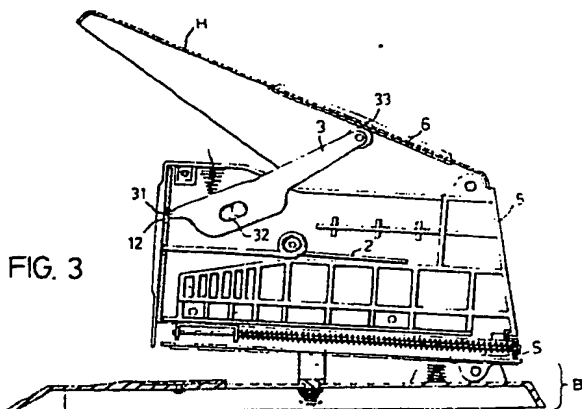


FIG. 4

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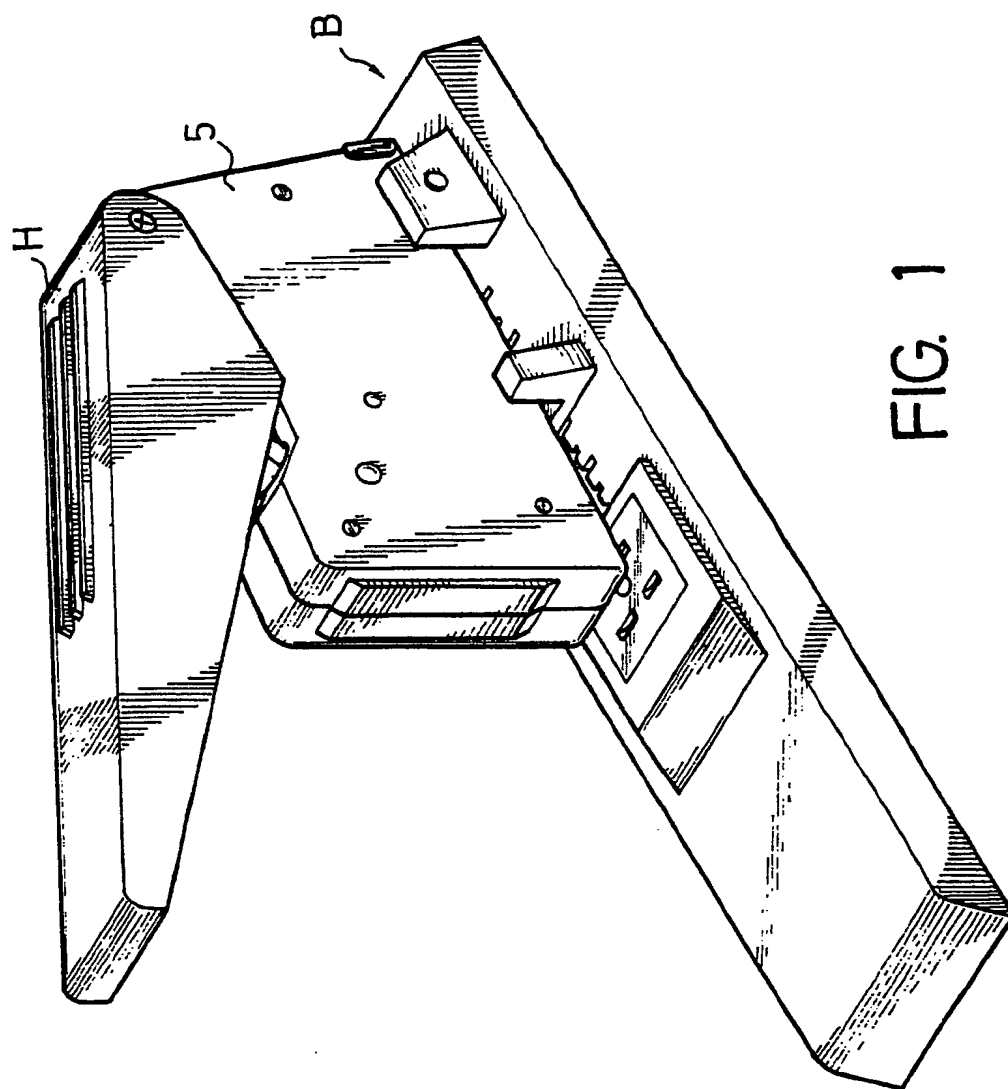


FIG. 1

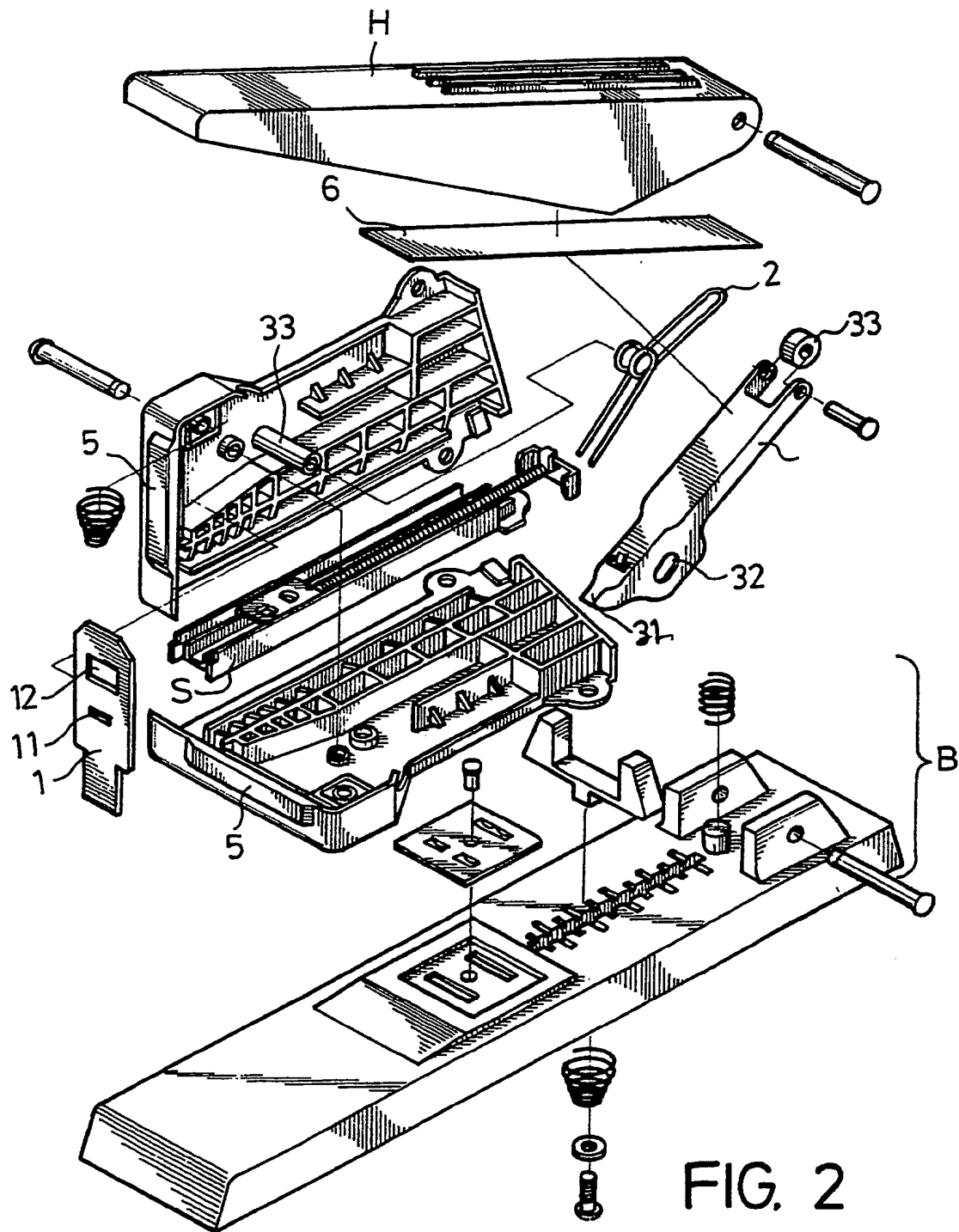


FIG. 2

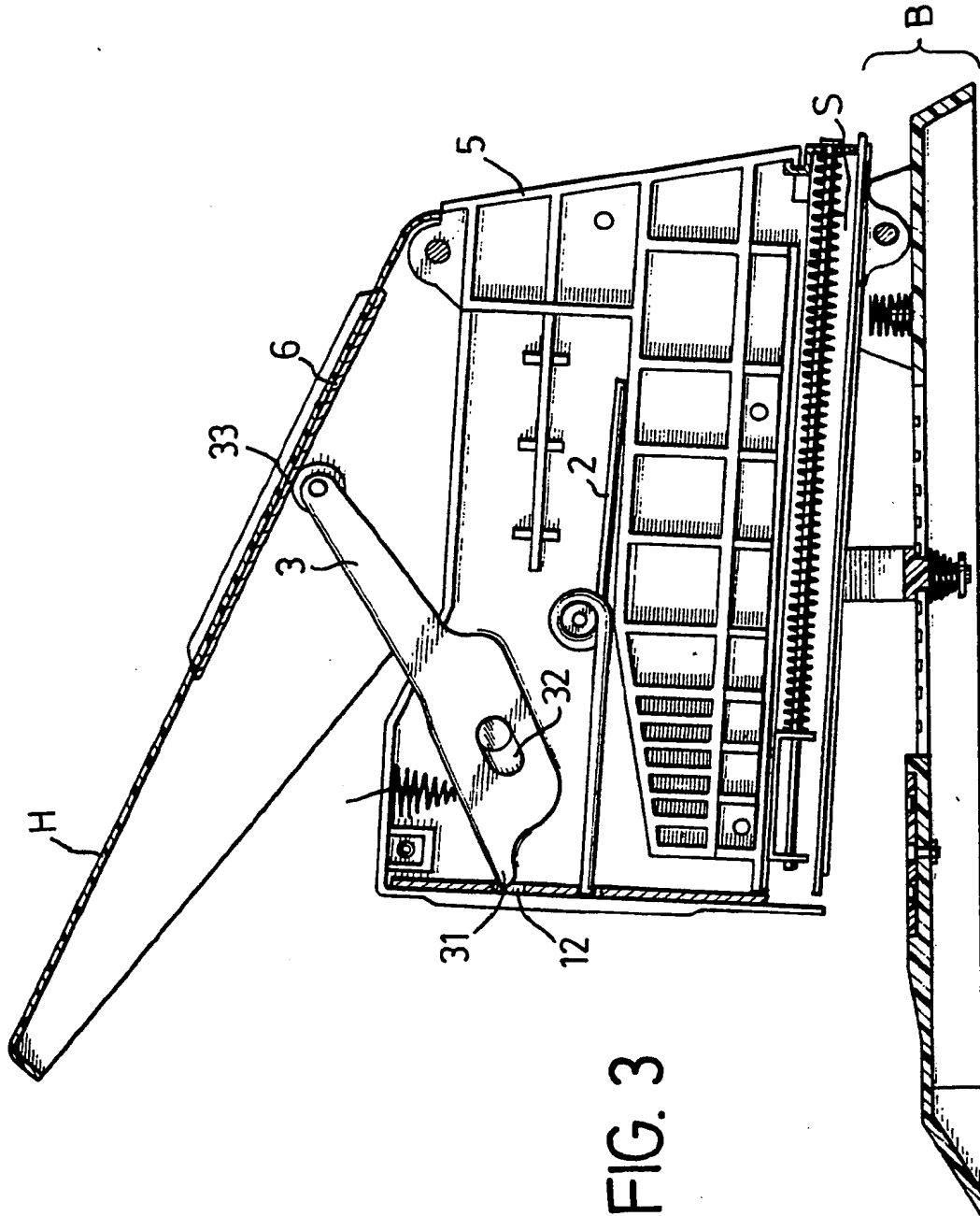
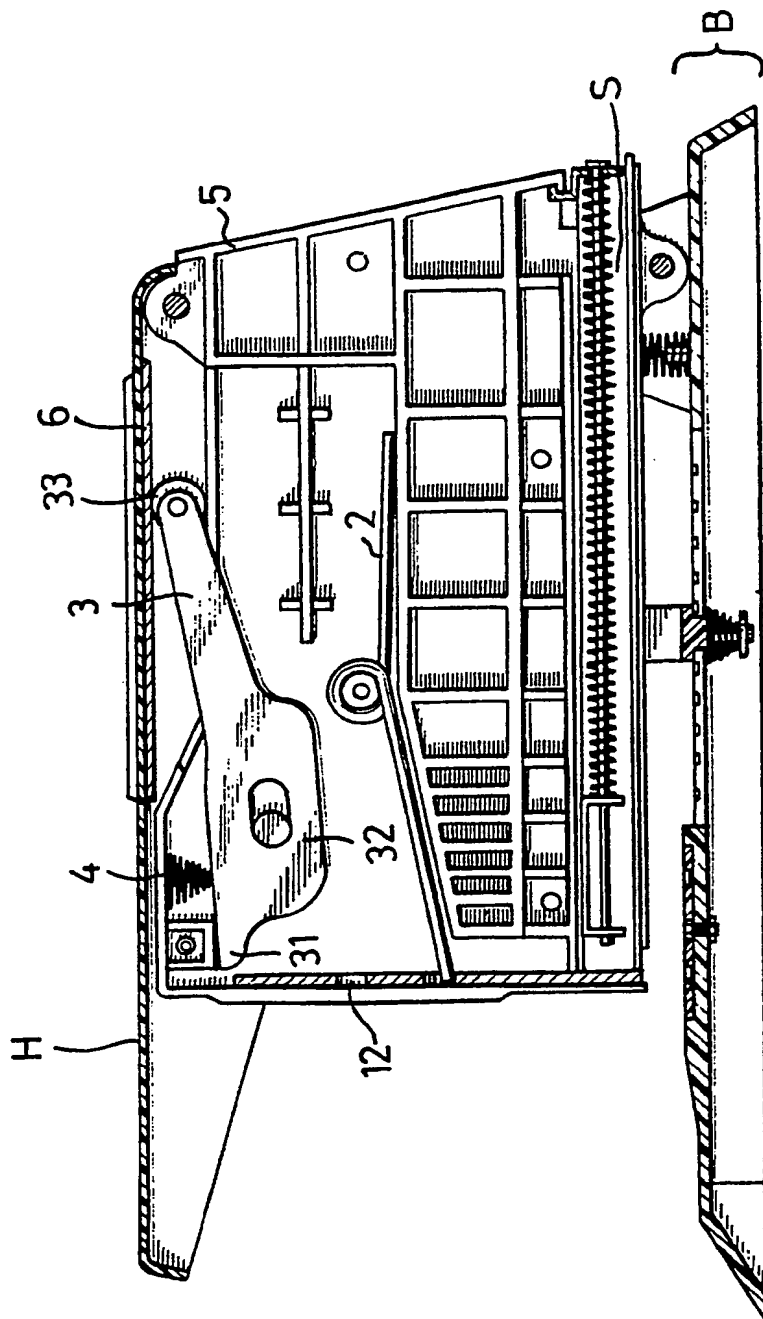


FIG. 3



TITLE: AN IMPROVED STAPLER

This invention relates to an improved stapler.

In conventional staplers, there is provided a steel pressing piece, of which the upper end is in
05 contact with the handle of the stapler. When the user depresses the handle, the pressing piece is pressed down so that its lower end urges the first one of a row of staples against an object which is to be stapled. The force exerted by the pressing piece on the staple
10 is directly proportional to the force applied by the user on the handle. The user may unnecessarily apply excessive strength on the handle, which far exceeds what is actually required. The excessive strength, if applied to the staple, may cause its "prematured
15 bending". In other words, the staple may be deformed under the strong impact before its two tips pierce through the whole stack of sheets, thus the tips may not successfully pierce all the sheets to reach the underlying recessed staple bender, but bend before they
20 pierce the bottommost sheet. As a result, failure of stapling is frequent.

Accordingly, it is the object of this invention to provide an improved stapler which always ensures a successful stapling.

25 According to a first feature of this invention, the downward movement of the pressing piece which presses down a staple against a stack of sheets is not

directly caused by the handle, but by a stressed first spring. Normally the first spring is in stressed state. When the user depresses the handle, the potential energy stored in the spring is triggered to
05 release, so that the pressing piece is forced downwardly to strike at the staple with a force which only depends on the spring. Thus the force applied to the pressing piece (and therefore to the staple) is always constant and independent from the user. When the
10 user releases the handle, the handle automatically returns to its original position under the resumptive force of a second spring, so the pressing piece is lifted up to its original position, and the first spring is stressed again. Needless to say, the resumptive
15 ptive force of the second spring must be stronger than that of the first spring to overcome the resistance of the latter to bring the handle to its normal position.

This invention will be better understood when read in connection with the accompanying drawing in which:

20 In the drawings:

Fig. 1 is a perspective view of a stapler according to this invention;

Fig. 2 is a fragmentary view of the stapler in
25 Fig. 1;

Fig. 3 and Fig. 4 are respectively the sectional views of the stapler in Fig. 1, showing the handle in

its normal and depressed state.

[DETAILED DESCRIPTION OF PREFERRED EMBODIMENT]

Referring to the drawing, this invention comprises a base (B) which is substantially the same as the base of ordinary staplers. As stated before, the characteristic feature consists in the stapling mechanism which comprises a pressing piece (1) different from the pressing piece of ordinary stapler, and a spring (2) which urges the pressing piece (1) against the first one of a row of staples. Preferably the spring (2) is a torsion spring. The pressing piece (1) has a hole (11) and a slot (12). One end of the spring (2) is inserted into the hole (11) so that the pressing piece (1) and the spring (2) are always engaged. To trigger the stored potential energy of the spring (2), there is provided a lever (3), of which one end (31) is inserted into the slot (12) and therefore holding the pressing piece (1) at its high position where the spring is stressed (See Fig. 3). If the user depresses the handle (H) of the stapler, the end (31) of the lever (3) will leave the slot (12) of the pressing piece (1). Thus the pressing piece (1) is no longer held by the lever (3), and is pushed by spring (2) downwardly to consume the first one of a row of staples (not shown) received in a staple-row guide (5), thus effecting a stapling (See Fig. 4). When the user releases the handle (H), a second spring (4), which is

compressed when the user depresses the handle (H). will
force the handle (H) to resume its normal position in
Fig. 3. As stated before, the resumptive force of the
second spring (4) is greater than that of the first
05 spring (2).

To enable the end (31) of lever (3) to leave the
slot (12) of the pressing piece (1), the lever (3) must
not be fixedly, but floatingly pivoted. For this
reason, it has a long slot (32) in which a pin (33) is
10 received. Preferably the pin (33) is integrally
formed in one of two split housing halves (5) in which
the staple-row guide (5) and the lever (3) are
received. Since this is a well known means and not the
exclusive solution of this invention, its detailed
15 description is not necessary.

The other end of the lever (3) opposite to the
end (31) is provided with a roller (33) which
facilitates the movement of this end along the inner
side of the handle (H). A steel strip (6) can be
20 provided on the inner side of the handle (H) to reduce
the wearing thereof.

CLAIM:

1. A stapler comprising:

a base with a staple bender;

a handle pivoted on said base and pivotable between a normal, high position and a low position, with a resumptive spring which biases said handle toward said high position;

a staple-row guide to receive a row of staples;

a pressing piece which presses the first staple of said row of staples downwardly toward said staple bender when said handle is depressed to said low position;

characterized by that a further spring and a retaining means are provided,

said retaining means being engaged with said pressing piece when said handle is in said high position and disengaged with said pressing piece when said handle is in said low position;

said further spring being engaged with said pressing piece and biasing the latter toward said staple bender, and being in stressed state when said handle is in said high position.

2. A stapler according to Claim 1, wherein said retaining means is a lever, of which one end is engaged with said pressing piece and of which another end is in contact with said lever, with a long slot in which a pin is receive.

3. A stapler according to Claim 2, wherein said lever has a roller on its another end, and said handle has a steel strip along which said roller rolls.

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